United States
Department of
Agriculture

**Forest
Service**

Forest Insect and Disease Conditions in the United States 1982

Foreword

This is the 32nd annual report of insect and disease conditions in U.S. forests. The report was compiled by the Forest Pest Management, State and Private Forestry, Washington Office, and provides forest land managers with information on the status of major forest insect and disease pests in 1982.

A host of biological agents and natural events continuously shape forest ecosystems. The USDA Forest Service monitors these changes with periodic resource inventory surveys, which show that the annual, unsalvaged growing stock mortality on commercial timberland is about 3.9 billion cubic feet. Fire and other factors account for an estimated 40 percent of the total, while insect and disease activity contributes to 60 percent of the mortality. (See chart below.)

The information on pests discussed in this report is based largely on special pest surveys, evaluations, and other reports of pest activity. Additional information can be obtained directly from Forest Service Regional and Area Offices.

We appreciate the assistance of all State, Federal, and private cooperators who provided information for this report.

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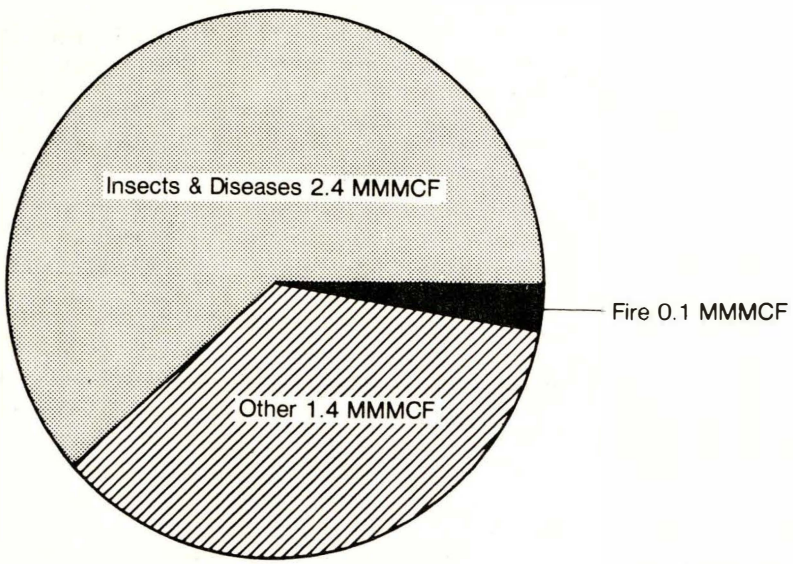
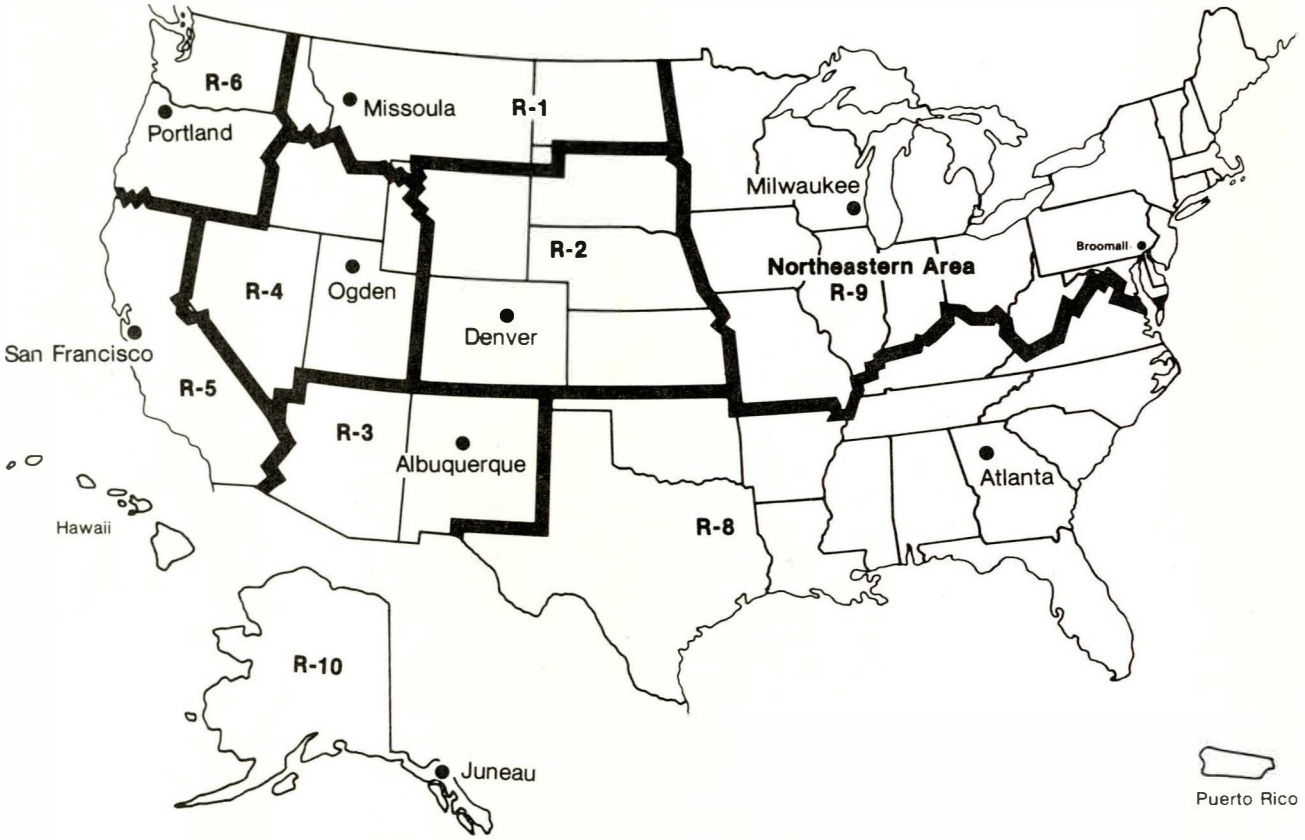
April 1983

Average Annual Mortality on Commercial Timberland in the United States



Total = 3.9 Billion Cubic Feet

USDA Forest Service Regions and Area



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Region 4
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1982 National Summary

EASTERN CONDITIONS

The spruce budworm and the gypsy moth were the most damaging insects in the Eastern United States in 1982.

Gypsy moth-caused defoliation declined to 8.2 million acres in 1982 (table 1). This is a 36 percent decrease from the record 12.8 million acres defoliated in 1981, but is still the second highest level of defoliation on record. Defoliated areas are shown in figure 1. Fifteen States now have areas generally infested with the gypsy moth. These are Connecticut, Delaware, Maine, Maryland, Massachusetts, Michigan, New Hampshire, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, Vermont, Virginia, and West Virginia. Twenty-eight newly discovered isolated gypsy moth infestations, remote from the generally infested area, were found in twelve other States (California, Florida, Illinois, Indiana, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Washington, and Wisconsin) in 1982. Previously discovered isolated infestations exist in another three States (Arkansas, Alabama, and Nebraska).

Spruce budworm defoliation continued to decrease, with 4.3 million acres defoliated in 1982 (table 2). Defoliation is mapped in figure 2.

Southern pine beetle populations have increased over the extremely low level reported in 1981 and have spread to over 7 million acres in portions of Alabama, Arkansas, Georgia, Louisiana, Mississippi, South Carolina, and Texas (figure 3).

Root and stem decay fungi caused the major disease-caused losses to eastern hardwoods. Other hardwood disease problems of concern included beech bark disease in the Northeast, stress-induced oak decline throughout the South, and oak wilt in central Texas.

Fusiform rust and annosus root rot continue to be the most damaging diseases of loblolly and slash pine plantations in the South.

The European strain of scleroderris canker and European larch canker, both thought to be introduced to the Northeast from Europe, did not spread significantly in 1982, although some new locations were found (figures 6 and 7).

WESTERN CONDITIONS

In the West, the mountain pine beetle and the western spruce budworm were the most damaging insect pests of 1982.

Western spruce budworm-defoliated areas (figure 4) covered about 8.7 million acres in 1982. This represented almost a 4-million-acre increase over the 1981 level (table 3). Especially dramatic increases were noted in Montana and Oregon.

Mountain pine beetle-caused tree killing remained at high levels in 1982, with approximately 4 million acres infested (figure 5). Colorado, Idaho, Montana, Oregon, Utah, Washington, and Wyoming were most severely affected.

Dwarf mistletoes and root diseases were the most damaging diseases of western conifers. Dwarf mistletoe losses are shown in table 4. Root diseases are of particular concern because they not only cause outright tree mortality, butt rot, and growth loss but also predispose trees to insect attack and windthrow. They may be especially serious in the future because if untreated, they persist throughout the stand rotation and can carry over and intensify from one rotation to the next.

Other important conifer diseases included various foliage diseases, which were numerous and widespread; white pine blister rust, which causes lethal stem and branch cankers and is the most important disease of western white and sugar pines; and stem decay fungi, which continue to cause considerable damage in old-growth conifer stands.

Forest Insect and Disease Conditions by Region

NORTHERN REGION (R-1)[1]

Insect	Host	Location	Remarks
Mountain pine beetle *Dendroctonus ponderosae*	Lodgepole pine, ponderosa pine, and other pines	Idaho, Montana, Wyoming	Infestations remained static in Idaho with activity mainly on the Nezperce National Forest. Populations declined in several areas of Montana in 1982, but infestations persist on the Beaverhead, Flathead, Gallatin, Kootenai, Lewis and Clark, and Lolo National Forests; Glacier and Yellowstone National Parks; the Blackfoot, Crow, and Flathead Indian Reservations; and on BLM lands in the Centennial Mountains. Less extensive infestations occur on the Custer, Deerlodge, and Helena National Forests and the Fort Belknap and Northern Cheyenne Indian Reservations. Most mortality is in lodgepole pine. Beetle infestations cover nearly 2 million acres of lodgepole pine and 147 thousand acres of ponderosa pine, whitebark pine, and western white pine.
Douglas-fir beetle *Dendroctonus pseudotsugae*	Douglas-fir	Idaho, Montana, Wyoming	Activity continued in Idaho and increased on the Flathead, Gallatin, and Lolo National Forests and Glacier National Park in Montana. New beetle-killed trees appeared this year on the Custer, Helena, and Kootenai National Forests in Montana and Yellowstone National Park in Wyoming.
Spruce beetle *Dendroctonus rufipennis*	Englemann and other spruces	Idaho, Montana	More than 41,000 acres of spruce beetle-attacked trees were detected on the Flathead, Kootenai, and Lolo National Forests; the Flathead Indian Reservation; and Glacier National Park in Montana--a tenfold increase from 1981. Activity in Idaho was confined to the upper Priest River and Moyie River areas.
Pine engraver beetle *Ips pini*	Pines	Idaho, Montana	Pine engraver-caused mortality decreased this year. Active infestations occur on the Mica State Forest in Idaho and in Glacier National Park in Montana.
Western balsam bark beetle *Dryocoetes confusus*	Subalpine fir	Idaho, Montana, Wyoming	Only one small infested area near Priest Lake occurred in Idaho. Infestations increased in Montana, mainly on the Flathead and Gallatin National Forests. Other infested areas occurred on the Beaverhead National Forest, the Flathead Indian Reservation, and Glacier and Yellowstone National Parks.

[1] Includes forests in Montana, northern Idaho, North Dakota, northwestern South Dakota, and National Park Service lands in northwestern Wyoming.

NORTHERN REGION (R-1) - continued.

Insect	Host	Location	Remarks
Western spruce budworm *Choristoneura occidentalis*	Douglas-fir, true firs	Montana, Wyoming	No budworm defoliation occurred in north Idaho in 1982. Defoliation increased significantly during 1982 in Montana and Wyoming. Outbreaks on the Beaverhead, Deerlodge, and Gallatin National Forests and Yellowstone National Park increased in intensity. In western Montana, especially on the Bitterroot National Forest, defoliation occurred in large areas that were largely undamaged in 1980 and 1981. Populations are increasing statewide and will probably continue increasing for several years.
Douglas-fir tussock moth *Orgyia pseudotsugata*	Douglas-fir, true firs, spruce	Idaho, Montana	Trapping of male moths showed a general increase in Idaho, and more plots with high counts occurred in Montana. Defoliation of ornamentals occurred in Hayden Lake, Coeur d'Alene, Plummer, Gennesse, and in several other small towns between Lewiston and Grangeville, Idaho. Defoliation of ornamentals occurred in Polson, Sommers, and Missoula, Montana. Populations are increasing in both States.
Larch casebearer *Coleophora laricella*	Western larch	Idaho, Montana	Defoliation has reached its lowest point in several years. No defoliation was detected and larvae were difficult to find.
Pine butterfly *Neophasia menapia*	Lodgepole pine, ponderosa pine	Idaho, Montana	Scattered populations of pine butterfly occur in the Clearwater area and near Winchester, Idaho. Populations increased noticeably in Montana, mainly in the Bitter Root Valley south of Missoula; however, aerially visible defoliation is not detectable.
Western pine shoot borer *Eucosma sonomana*	Ponderosa pine	Idaho, Montana	Pine shoot borer is causing height growth reduction in about 12 percent of plantations surveyed on the Clearwater and the Idaho Panhandle National Forests in Idaho and in about 9 percent of those surveyed on the Bitterroot, Flathead, Kootenai, and Lolo National Forests in Montana.
Cranberry girdler moth *Chrysoteuchia topiaria*	Douglas-fir, western larch	Idaho	This has recently been identified as a pest in nursery beds at the Coeur d'Alene tree nursery near Coeur d'Alene, Idaho.
Douglas-fir needle midge *Contarinia pseudotsugae*	Douglas-fir	Idaho	Heavy defoliation was scattered throughout about 36,000 acres in the Priest River Valley in north Idaho.
Pine needle sheathminer *Zelleria haimbachi*	Ponderosa pine, lodgepole pine, limber pine	Montana	Several thousand acres of ponderosa pine near Helena, Montana, were infested. This miner also caused heavy defoliation of lodgepole and limber pine on the Gallatin National Forest.

NORTHERN REGION (R-1) - continued.

Insect	Host	Location	Remarks
Lodgepole terminal weevil *Pissodes terminalis*	Lodgepole pine	Montana	Widespread terminal killing continued in lodgepole pine plantations on the Beaverhead, Gallatin, Kootenai, and Lolo National Forests in 1982.
Pine bark aphid *Pineus sylvestris*	Scotch pine	Montana	Christmas tree plantings in the Bigfork and Kalispell, Montana, areas were damaged.
June beetle *Polyphylla decemlineata*	Scotch pine	Montana	Newly planted Christmas trees were killed by larvae feeding on roots. Losses in some areas were as high as 25 percent.
Variable oakleaf caterpillar *Heterocampa manteo*	Bur oak, aspen, other hardwoods	North Dakota	Caterpillars were common in natural hardwood stands surveyed. Defoliation levels as high as 90 percent occurred in the Sully's Hill National Wildlife Preserve and in the Sheyenne River Valley.

Disease	Host	Location	Remarks
Stem and Branch			
Dwarf mistletoes			
Arceuthobium americanum	Lodgepole pine	Idaho, Montana	Nearly 47 million cubic feet of lodgepole pine, Douglas-fir, and western larch growth is lost annually on lands of all ownerships in Montana and northern Idaho. Infested area is about 3.1 million acres.
Arceuthobium douglasii	Douglas-fir	Idaho, Montana	
Arceuthobium laricis	Western larch	Idaho, Montana	
White pine blister rust *Cronartium ribicola*	Western white pine	Idaho, northwestern Montana	The rust resistance breeding program continues to increase annual western white pine seed production from disease-resistant orchards. Risk of rust infection apparently varies with site conditions; in some low-risk areas, naturally occurring white pine can be grown successfully.
Comandra blister rust *Cronartium comandrae*	Lodgepole pine, ponderosa pine	Montana, Idaho	Comandra rust is common on lodgepole and ponderosa pine in many areas. A sapling stand near Lincoln, Montana, was severely infected, with subsequent sequoia pitch moth invasion of many cankers.
Atropellis canker *Atropellis piniphila*	Lodgepole pine	Montana	Severe damage occurred on the Helena National Forest in mature lodgepole pine and on the Flathead Indian Reservation in seedling-sapling lodgepole pine. Infection level in the Reservation stand was over 90 percent.
Dwarf mistletoe blister rust, *Peridermium bethelii*	Lodgepole pine	Montana	This rust fungus was correctly identified for the first time in Montana. It superinfects lodgepole pine only where dwarf mistletoe infections occurs.
Aspen canker rot *Phellinus tremula*	Aspen	North Dakota	Quite prevalent in all areas surveyed in the State.
Root Disease			
Laminated root rot *Phellinus weirii*	Douglas-fir, grand fir, western redcedar, and other conifers	Idaho, Montana	Root diseases are probably the most important long-term disease problems in the Northern Region's forests. Root disease/bark beetle complexes account for significant annual mortality in mixed conifer stands. Losses are especially severe in Douglas-fir and grand fir stands which have a logging history. Presence of bark beetles and root pathogens, which interact to cause tree mortality, makes recognition and treatment difficult. *Phellinus weirii* and *Armillariella mellea* are commonly associated with Douglas-fir beetle on Douglas-fir and fir engraver on grand fir. Black-stain root disease of ponderosa pine is associated with western pine beetle attacks. *P. weirii* and *A. mellea* are also killing seedlings in planted or naturally regenerated stands centered around old infected stumps from the previous stand.
Shoestring root rot *Armillariella mellea*	Douglas-fir, other conifers	Idaho, Montana	
Black-stain root disease *Ceratocystis wageneri*	Douglas-fir, lodgepole pine, ponderosa pine	Montana	
Annosus root rot *Heterobasidion annosum*	Ponderosa pine, western hemlock, subalpine fir	Idaho, Montana	
Brown cubical butt rot *Phaeolus schweinitzii*	Douglas-fir, other conifers	Idaho, Montana	

Disease	Host	Location	Remarks
Foliage Disease			
Larch needle cast *Hypodermella laricis* *Meria laricis*	Western larch	Idaho, Montana	Incidence of both needle diseases was much reduced from last year, but both were still severe in a few locations on the Flathead and Lolo National Forests in Montana.
Red band needle blight *Dothistroma pini*	Ponderosa pine, lodgepole pine, western white pine	Idaho	Incidence was much lower than last year, but this disease was still evident near the Wilderness Gateway Campground on the Clearwater National Forest.
Lophodermium needle cast *Lophodermium pinastri*	Scotch pine	Idaho, Montana	Incidence of this needle cast was much lower this year. Most areas are showing recovery.
Miscellaneous needle casts			
Rhabdocline pseudotsugae	Douglas-fir	Idaho, Montana	Incidence of these needle casts was widespread in 1982.
Elytroderma deformans	Ponderosa pine	Idaho, Montana	
Lophodermella concolor	Lodgepole pine	Idaho, Montana	
Lophodermella spp.	Ponderosa pine	North Dakota	
Vascular wilt			
Dutch elm disease *Ceratocystis ulmi*	American elm	Montana, North Dakota	Dutch elm disease is still prevalent in Billings and Missoula, Montana. The disease is increasing in North Dakota, especially in the Minot area along the Des Lacs River.
Nursery Disease			
Sirococcus tip blight *Sirococcus strobilinus*	Ponderosa pine	Idaho	This tip blight continues to cause damage at two private nurseries near Bonners Ferry.
Pythium root disease *Pythium aphanidermatum* *P. ultimum*	Western white pine	Idaho	Several 1-0 western white pine seedbeds were affected by these fungi at the Coeur d'Alene Nursery.
Grey mold *Botrytis cinerea*	Western larch, lodgepole pine	Idaho, Montana	Occurred in container-grown seedlings at the Coeur de'Alene Nursery in Idaho and the Flathead Indian Reservation Nursery and a private nursery at Plains, Montana.
Larch needle cast *Meria laricis*	Western larch	Idaho	This fungus was found in 2-0 seedlings at the Coeur d'Alene Nursery.
Lophodermium tip blight *Lophodermium nitens*	Ponderosa pine	Idaho	Common on much of the 2-0 seedling stock lifted at the Coeur d'Alene Nursery in the spring of 1982. Killed only the needle tips.
Western gall rust *Endocronartium harknessii*	Ponderosa pine	Idaho	Found in several locations at the Coeur d'Alene Nursery. Although most were culled during sorting operations, some diseased trees were probably outplanted.

ROCKY MOUNTAIN REGION (R-2)[1]

Insect	Host	Location	Remarks
Mountain pine beetle *Dendroctonus ponderosae*	Lodgepole pine, ponderosa pine	Colorado, South Dakota, Wyoming	In the Black Hills, populations are up on the western half. The Bear Lodge population is high but remains static. Populations are low on the eastern half of the Black Hills. Within the Roaring Fork and North Fork of the Little Snake River on the Medicine Bow National Forest, populations are increasing in susceptible stands. Populations are on the rise in the Shirley, Muddgy, and Casper Mountains. On Green Mountain and in the Lander area, populations remain at a static high and moderate levels, respectively. In Colorado, populations in ponderosa pine remain low. Significant tree mortality increased throughout the range of lodgepole pine.
Spruce beetle *Dendroctonus rufipennis*	Spruce	Colorado, Wyoming	Populations continue to rise in Wyoming and Colorado in highly susceptible stands. Group killing is still in the 4-6 tree range and smaller. The Rio Grande and Routt National Forest outbreaks continue to expand with significant mortality being recorded.
Douglas-fir beetle *Dendroctonus pseudotsugae*	Douglas-fir	Colorado, Wyoming	Scattered tree killing by this insect continues in Colorado and Wyoming.
Pine engraver beetles *Ips* spp.	Ponderosa pine, pinyon pine, lodgepole pine	South Dakota, Wyoming, Kansas, Colorado	*Ips* populations are prevalent in local areas in fresh slash and weakened trees.
Red turpentine beetle *Dendroctonus valens*	Ponderosa pine	Colorado, South Dakota	Populations at low levels.
Western balsam bark beetle *Dryocoetes confusus*	True firs	Colorado	Scattered loss continues throughout the fir range in Colorado.
Western spruce budworm *Choristoneura occidentalis*	Douglas-fir, white fir	Colorado, Wyoming	Budworm continues widespread in the Region. Intensity of feeding is down on the Front Range of Colorado. Acres by intensity of infestation are: Colorado: Light 1,207,286; Moderate 613,841; Severe -- Wyoming: Light --; Moderate --; Severe 182,054
Douglas-fir tussock moth *Orgyia pseudotsugata*	Spruce	Colorado	Infestations on ornamental spruce throughout the greater Denver metropolitan areas. Also observed in the Sedalia and Green Mountain Falls area.

[1] Includes National Forests in Colorado, Kansas, Nebraska, South Dakota, and central and eastern Wyoming.

ROCKY MOUNTAIN REGION (R-2) - continued.

Insect	Host	Location	Remarks
Western tent caterpillar *Malacosoma californicum*	Aspen	Colorado	The outbreak on the San Juan National Forest and adjacent private lands covers 36,000 acres. Tree mortality continues to be light.
Zimmerman pine tip moth *Dioryctria zimmermani*	Austrian pine, ponderosa pine	Nebraska, Colorado	In Nebraska, populations were generally down in 1982. The highest populations occurred on the Nebraska National Forest. In Colorado, it is found in ornamental and shelterbelt plantings.
Pine tip moth *Rhyacionia* sp.	Austrian pine, ponderosa pine, Scotch pine	Nebraska, Kansas, Colorado	Continues to be a problem on young pine.
Walnut caterpillar *Datana integerrima*	Walnut	Kansas	Populations were very high in the northeastern part of the State.
Pandora moth *Coloradia pandora*	Austrian pine	Colorado	Viable eggs were collected near Cortez, Colorado. This area will be monitored for pandora moth in 1983.

Disease	Host	Location	Remarks
Stem and Branch			
Dwarf mistletoes			
Arceuthobium americanum	Lodgepole pine	Colorado, Wyoming	Continues as the most important disease problem in the Region. An estimated 51 percent of the type is infected with an annual merchantable loss of 10 million cubic feet on National Forests alone. Suppression activities have increased substantially in the past few years.
Arceuthobium vaginatum subsp. *cryptopodum*	Ponderosa pine	Colorado	An estimated 20 percent of the type is infected as determined from an extensive roadside survey of ponderosa pine stands on National Forests. An evaluation of the survey technique showed a high correlation between dwarf mistletoe intensity along the roadside and conditions 2-chains from the road. Studies showed that frequency and intensity of infection vary with habitat type. For example, the *Pinus ponderosa/Cerocarpus montanus* habitat type has more mistletoe than other ponderosa pine habitat types.
Dwarf mistletoe blister rust, *Peridermium bethelii*	Lodgepole pine	Wyoming	This rust, which is associated with *A. americanum*, was found in many new locations on the Shoshone National Forest. In the past, this rust was confused with the similar comandra blister rust.
Comandra blister rust *Cronartium comandrae*	Lodgepole pine	Western Wyoming	Continues as the most important disease problem on the Wind River Ranger District, Shoshone National Forest. A survey of the commercial lodgepole pine type indicated the rust is a primary cause of mortality in at least 50 percent of the standing dead saplings and poles.
Thyronectria canker *Thyronectria austro-americana*	Honeylocust	Colorado, Kansas	A very severe problem in windbreaks in western Kansas. It appears that wounding is involved, including sunscald, borers, pruning, and other natural wounding.
Cytospora canker *Cytospora* spp.	Hardwoods	Colorado	Reported on many hosts.
Botryodiplodia canker *Botryodiplodia* spp.	Red oak	Southeastern Nebraska	Extensive branch dieback and some tree mortality occurred in pockets of native oak stands. These areas were heavily infected with the periodical cicada in 1981 and cankered branches were heavily damaged by cicada oviposition.

Disease	Host	Location	Remarks
Root Disease			
Shoestring root rot *Armillariella mellea*	All conifers	Colorado, Wyoming, South Dakota	This disease remains the most prevalent root disease in the Region. A mortality survey on 363,206 acres of the San Juan National Forest indicated 24 percent of the spruce-fir type surveyed was infected. Cause of mortality of white fir Christmas trees near Rye, Colorado, adjacent to the Pike-San Isabel National Forests. Mortality of subalpine fir reported at two Colorado ski areas where *Armillariella mellea* and several bark beetles are involved, including *Scolytus* spp. and *Dryocoetes confusus*.
Black-stain root disease *Ceratocystis wageneri*	Pinyon pine	Western Colorado	The primary root disease in pinyon type west of the Continental Divide. Soil fumigation, trenching, and silvicultural treatments are being tested in Mesa Verde National Park to limit spread of the disease.
	Douglas-fir	Front Range Colorado	First report on Douglas-fir in Colorado and first confirmation of black-stain east of the Continental Divide.
Foliage Disease			
Anthracnose *Gloeosporium* spp.	Maple, walnut, sycamore	Kansas, Nebraska, Eastern Colorado	Reported on maples, walnut, and sycamore. Walnut anthracnose reports increased in number and earlier than normal. Denver metro area and Fremont County.
Gloeosporium aridum	Green ash	Eastern South Dakota	Commonly observed throughout eastern part. of State. A cool, wet spring responsible.
Ash leaf rust *Puccinia peridermiospora*	Green ash	Eastern South Dakota	Commonly observed throughout eastern part. of State. A cool, wet spring responsible.
Poplar leaf rust *Melampsora medusae*	Cottonwood	Central-South Dakota, Nebraska	Approximately 96 acres in a recreation area at Oahe Dam, SD, suffered heavy to severe infection resulting in up to 90 percent early defoliation. Moderate to heavy infection scattered throughout the State. Considerable defoliation of native stands in Nebraska.
Diplodia tip blight *Diplodia pinea*	Ponderosa pine	South Dakota	Occurring primarily along the eastern edge of the Black Hills east of Custer extending from Sturgis to Hot Springs. Severity of infection has decreased since 1979 when first reported in native pine stands in the Black Hills. Mortality from this disease is occurring in the Sioux Falls and Yankton areas.

ROCKY MOUNTAIN REGION (R-2) - continued.

Disease	Host	Location	Remarks
Diplodia tip blight *Diplodia pinea*	Ponderosa pine, Austrian pine	Kansas, Nebraska	Increase in number of reports on landscape trees in both States. Both Austrian and ponderosa pines severely infected. Reported in all areas of Kansas on shelterbelt trees, particularly Austrian pines.
	Austrian, Scotch, ponderosa, and mugo pines	Nebraska	Disease more severe in eastern Nebraska in 1982 than in previous 20 years. High moisture during period of high susceptibility resulted in extensive infection of new shoots.
Dothistroma needle blight *Dothistroma pini*	Ponderosa pine, Austrian pine	Nebraska	Higher than normal levels of infection reported in eastern Nebraska related to above-normal rainfall in 1982 growing season.
Brown spot needle blight *Scirrhia acicola*	Conifers	Kansas	Numerous reports of the disease in Christmas tree plantations. Abundant rainfall and high humidity implicated.
Needle cast *Lophodermium* spp.	Ponderosa pine	Black Hills	As last year, this disease was evident throughout the eastern Black Hills. No mortality reported. Often, infected trees were also infected with *Diplodia pinea*.
Vascular Wilt			
Dutch elm disease *Ceratocystis ulmi*	Elm species	South Dakota	6,268 newly infected trees were found in 77 towns and cities. Confirmed for the first time in Lawrence County, bringing statewide total to 57 out of 66 counties infected.
		Colorado	890 newly diseased trees diagnosed in 53 cities.
Nursery Disease			
Damping-off	Conifers	Colorado	*Fusarium* spp. caused considerable losses of pines and spruce on old agricultural lands recently used as a conifer bareroot nursery.
Phoma sp.	Conifers	Nebraska	*Phoma* sp. has caused dieback and mortality of conifers following root-wrenching.
Phomopsis blight *Phomopsis juniperova*	Eastern redcedar, Rocky Mountain juniper	Nebraska	Tip dieback was evident in 1-0 eastern redcedar stock. Very common in windbreaks and young plantings.
Abiotic			
Low temperature	Eastern redcedar	Nebraska	A sudden, hard freeze before stock was dormant resulted in the loss of about 1 million trees.

Disease	Host	Location	Remarks
Snow damage	Ponderosa pine	Black Hills South Dakota	A heavy, wet snowfall in early October 1982 and accompanying winds resulted in top breakage and windthrow over 43,000 acres to 30 MM board feet of timber.
Cottonwood mortality	Cottonwood	Eastern Colorado	A total of 356 trees along the Arkansas and North Platte Rivers were sampled. Only 4 percent of trees were dead; however, 51 percent of live trees had some crown decline. Cytospora sp. was rare on damaged trees. Water stress may be implicated.
Hackberry decline	Hackberry	Kansas	Continues to be a problem in shelterbelts. Herbicide damage and defoliation by cankerworms are suspected as the main factors contributing to the decline.
Spruce decline	Spruce species	Eastern half South Dakota	For the past 4 years, an unknown decline of ornamental spruce has been noted that results in early casting of needles at first on a few branches, then eventually over the entire tree. No mortality noted.

SOUTHWESTERN REGION (R-3)[1]

Insect	Host	Location	Remarks
Mountain pine beetle *Dendroctonus ponderosae*	Ponderosa pine	Arizona, New Mexico	Small areas of mortality occurred on the Carson and Kaibab National Forests and the Jicarilla Apache Indian Reservation.
Western pine beetle *Dendroctonus brevicomis*	Ponderosa pine	Arizona, New Mexico	Mortality remained at low levels throughout most of the ponderosa pine type and was usually limited to single trees or groups of 2-10. Trees attacked were mainly mature or overmature and often were weakened by lightning strikes, fires, diseases, or other factors.
Ips beetles *Ips* spp.	Pines	Arizona, New Mexico	*Ips* beetle activity decreased from last year. A few areas of significant mortality were located on the Apache-Sitgreaves, Coconino, and Prescott National Forests and the San Carlos Indian Reservation.
Spruce beetle *Dendroctonus rufipennis*	Engelmann spruce	Arizona, New Mexico	Spruce beetle-caused mortality increased dramatically, with major infestations occurring over 4,600 acres on the Pecos Ranger District, Santa Fe National Forest, and 14,000 acres on the Fort Apache Indian Reservation.
Douglas-fir beetle *Dendroctonus pseudotsugae*	Douglas-fir	Arizona, New Mexico	Scattered single tree and small group mortality occurred throughout the Region.
True fir beetles *Scolytus* spp. and *Dryocoetes confusus*	White fir, subalpine fir	Arizona, New Mexico	Scattered groups of 1-10 trees throughout most of the mixed conifer and spruce fir type in the Region. Heavy, concentrated mortality occurred on the Carson, Coconino, and Santa Fe National Forests.
Red turpentine beetle *Dendroctonus valens*	Ponderosa pine	Arizona	Widely scattered activity throughout northern Arizona.
Western spruce budworm *Choristoneura occidentalis*	Douglas-fir, true firs, spruce	Arizona, New Mexico	Total acres of visible defoliation decreased from 477,960 in 1981 to 368,485 in 1982. Areas with most extensive defoliation included the Carson, Cibola, Lincoln, and Santa Fe National Forests in New Mexico, and the Kaibab National Forest and Grand Canyon National Park in Arizona. A slight increase in area and intensity of defoliation is expected in 1983.
Western tent caterpillar *Malacosoma californicum*	Aspen	New Mexico	Acres of defoliation decreased.

[1] Includes forests in Arizona and New Mexico and National Park Service land in western Texas.

SOUTHWESTERN REGION (R-3) - continued.

Insect	Host	Location	Remarks
Large aspen tortrix *Choristoneura conflictana*	Aspen	Arizona, New Mexico	Scattered pockets of defoliation on the Carson and Kaibab National Forests.
Pandora moth *Coloradia pandora*	Ponderosa pine	Arizona	No visible defoliation due to 2-year life cycle; however, surveys indicate heavy defoliation will again occur next year near Jacob Lake, Arizona, on the Kaibab National Forest. In addition to the Jacob Lake area, pandora moth adults were observed at Prescott, Pinetop, Payson, and Crown King, Arizona.
Pinyon needle scale *Matsucoccus acalyptus*	Pinyon pine	Arizona, New Mexico	New outbreak located on the Hualapai Mountains near Kingman, Arizona. Other chronic infestations near Seligman and Prescott, Arizona, and Mountainair, New Mexico.
Pine needle sheathminer *Zelleria haimbachi*	Pinyon pine	Arizona	Tip damage was very extensive to individual trees on about 600 acres east of Flagstaff, Arizona.

SOUTHWESTERN REGION (R-3) - continued.

Disease	Host	Location	Remarks
Stem and Branch			
Dwarf mistletoes			
Arceuthobium vaginatum subsp. *cryptopodum*	Ponderosa pine	Arizona, New Mexico	Dwarf mistletoes continued to have a major impact on growth and yield of conifers in the Southwest.
A. douglasii	Douglas-fir	Arizona, New Mexico	
A. microcarpum	Engelmann spruce	Arizona, New Mexico	
Sycamore anthracnose *Gnomonia veneta*	Sycamore	Arizona	Caused extensive defoliation and branch dieback in the Sedona-Oak Creek Canyon area and at other scattered locations in northern Arizona.
Nursery Disease			
Fusarium spp. *Pythium* spp.	Ponderosa pine	New Mexico	Pre- and post-fumigation population surveys were conducted at the Albuquerque Tree Nursery in the spring of 1982. Fumigation was effective in reducing levels of *Fusarium* spp.

INTERMOUNTAIN REGION (R-4)[1]

Insect	Host	Location	Remarks
Mountain pine beetle *Dendroctonus ponderosae*	Lodgepole pine, ponderosa pine, other pines	Idaho, Utah, Wyoming	Mountain pine beetle killed approximately 4 million trees in 1982. With the exception of the Targhee National Forest, beetle populations through southern Idaho, northern Utah, and western Wyoming increased dramatically over 1981 levels. Most notable was the infestation on the Ashley National Forest where mortality increased to 3.5 million trees.
Jeffrey pine beetle *Dendroctonus jeffreyi*	Jeffrey pine	Nevada	Increases in tree mortality were observed on the Carson and Bridgeport Ranger Districts, Toiyabe National Forest, around Markleeville, California, and on the east shore of Lake Tahoe.
Spruce beetle *Dendroctonus rufipennis*	Engelmann spruce	Utah	Localized infestations of spruce beetle affected 4,500 acres of overmature spruce on the Bridger-Teton, Fishlake, Manti-LaSal, and Uinta National Forests.
Western balsam bark beetle *Dryocoetes confusus*	Subalpine fir	Nevada, Utah, Wyoming	Fir mortality continued to occur throughout the Region in 1982. This mortality is caused by a complex of root rots and *D. confusus*.
Douglas-fir beetle *Dendroctonus pseudotsugae*	Douglas-fir	Utah, Idaho	Localized pockets of Douglas-fir mortality occurred on Idaho and Utah forests.
Pine engraver beetle *Ips pini*	Pines	Idaho	Approximately 1,700 trees were killed on the Boise, Payette, and Salmon National Forests. This constitutes an upward trend over 1981 levels.
Western pine beetle *Dendroctonus brevicomis*	Ponderosa pine	Idaho, Utah	Low levels throughout Region.
Western spruce budworm *Choristoneura occidentalis*	True firs, Douglas-fir, western larch, spruce	Idaho, Utah, Wyoming	Approximately 2.5 million acres were defoliated Regionwide in 1982. All Forests experienced increased defoliation over 1981. Newly discovered areas of defoliation occurred on the Weiser Ranger District, Payette National Forest.
Larch casebearer *Coleophora laricella*	Western larch	Idaho	Declined significantly over the Boise and Payette National Forests.
Pine butterfly *Neophasia menapia*	Ponderosa pine	Idaho	Moderate to heavy defoliation over a small area on the Boise National Forest and private lands east of Cascade Reservoir.

[1] Includes forests in southern Idaho, Nevada, Utah, and western Wyoming.

INTERMOUNTAIN REGION (R-4) - continued.

Insect	Host	Location	Remarks
Western tussock moth *Orgyia vetusta gulosa*	Willows, *Ceanothus*	Idaho	Defoliated over 7,000 acres on the Idaho City and Emmett Ranger Districts on the Boise National Forest.
Douglas-fir tussock moth *Orygia pseudotsugata*	Douglas-fir, spruce, true fir	Idaho	Defoliation occurred on approximately 6,400 acres in the Owyhee Mountains.
Large aspen tortrix *Choristoneura conflictana*	Aspen	Utah	Approximately 200 acres of aspen defoliation on the Dixie National Forest.
Western pine shoot borer *Eucosma sonomana*	Ponderosa pine	Idaho	Infestations noted throughout Idaho. Heavy populations caused tree leader and lateral mortality in plantations on the Idaho City Ranger District, Boise National Forest.
Dioryctria spp.	Engelmann spruce	Idaho	Over 2 million seedlings girdled at the Lucky Peak Nursery, Boise National Forest.

Disease	Host	Location	Remarks
Stem and Branch			
Dwarf mistletoes *Arceuthobium* spp.	Douglas-fir, ponderosa pine, lodgepole pine, Jeffrey pine, western larch	Idaho, Utah, Wyoming, Nevada	These pests continued to have significant impacts on growth and yield of the host species throughout the Region. Dwarf mistletoe suppression projects removed infected residual overstory trees from 9,630 regeneration acres throughout the Region.
Comandra blister rust *Cronartium comandrae*	Lodgepole pine, ponderosa pine	Idaho, Utah, Wyoming	Cankers caused top-kill in lodgepole pine on the Bridger-Teton and Ashley National Forests.
Cytospora canker *Cytospora chrysosperma*	Aspen	Idaho, Utah	Cankers were found killing young branches on trees defoliated for 2 successive years by leaf spot.
Fir broom rust *Chrysomyxa arctostaphyli*	Firs	Idaho, Utah	Scattered incidence throughout host type.
Indian paint fungus *Echinodontium tinctorium*	Firs	Idaho, Nevada	Scattered in old-growth stands.
Western gall rust *Endocronartium harknessii*	Lodgepole pine, ponderosa pine	Idaho, Utah, Nevada, Wyoming	Scattered in host type.
Stalactiform rust *Cronartium coleosporioides*	Lodgepole pine	Idaho	Scattered in host type in south-central Idaho.
Spruce broom rust *Melampsorella caryophyllacearum*	Spruce	Idaho, Utah, Wyoming	Scattered incidence throughout host type.
Root Disease			
Annosus root rot *Heterobasidion annosum*	Ponderosa pine, Douglas-fir, spruce, true firs	Idaho, Utah, Wyoming, Nevada	Detections of *H. annosum* infections increased throughout the Region. The fungus and two other decay organisms were isolated from roots and stems of windthrown spruce in central Idaho.
Shoestring root rot *Armillariella mellea*	Subalpine fir, Engelmann spruce	Utah	This fungus was found killing subalpine fir and Engelmann spruce on the Manti-LaSal and Fishlake National Forests.
Foliage Disease			
Needle cast of ponderosa pine, *Elytroderma deformans*	Ponderosa pine	Idaho	Increased levels of infection were observed in southern Idaho.
Meria needle disease *Meria laricis*	Western larch	Idaho	Low levels of discoloration and defoliation observed on the Boise and Payette National Forests.

INTERMOUNTAIN REGION (R-4) - continued.

Disease	Host	Location	Remarks
Lodgepole pine needle cast, *Lophodermella concolor*	Lodgepole pine	Idaho	Light levels of infection throughout southern Idaho.
Pine needle rust *Coleosporium asterum*	Lodgepole pine	Idaho	High levels of infection found in host type plantations on the Targhee National Forest.
Needle rust of fir *Pucciniastrum* spp.	Firs	Idaho	Light levels of infection in southwestern Idaho.
Rhabdocline needle cast *Rhabdocline pseudotsugae*	Douglas-fir	Idaho	Light levels of infection throughout southern Idaho.
Marssonina leaf spot *Marssonina populi*	Aspen	Idaho, Utah, Wyoming	Greatly reduced levels of infection from the past 2 years.
Vascular Wilt			
Dutch elm disease *Ceratocystis ulmi*	American elm	Idaho, Utah	The first confirmed case in Utah was found on American elm in Salt Lake City in April. A survey being conducted by Utah Division of Lands and Forestry has found infected trees in Box Elder, Cache, Weber, Davis, and Salt Lake Counties. Disease-caused losses in southern Idaho declined as the host material diminished and the municipalities quickly removed infected trees.

PACIFIC SOUTHWEST REGION (R-5)[1]

Insect	Host	Location	Remarks
Mountain pine beetle *Dendroctonus ponderosae*	Sugar, ponderosa and lodgepole pine	Northern and central California	Scattered group mortality of 3 to 4 ponderosa pines occurred on the Ft. Bidwell Indian Reservation, Modoc County. Lodgepole pine mortality occurred at two sites near Lake Tahoe. Elsewhere damage was light.
Pine engraver beetles *Ips* spp.	Pines	California, statewide	Damage increased in 1982. Hosts were ponderosa pine in El Dorado, Placer, and Siskiyou Counties; lodgepole pine in Plumas County; and knobcone x Monterey pine in San Diego, Riverside, and Orange Counties.
Fir engraver *Scolytus ventralis*	Firs	California, statewide	Fir engravers, along with several pathogens, caused white fir mortality in several proposed timber sales. Mortality also occurred in some campgrounds and in the mountains of southern California.
Western pine beetle *Dendroctonus brevicomis*	Ponderosa pine, Coulter pine	California, statewide	Damage was generally light. Exceptions were an overstocked young ponderosa pine stand at Mountain Home Demonstration State Forest, Tulare County, and drought-stressed Coulter pines in the San Bernardino Mountains, San Bernardino County.
Red turpentine beetle *Dendroctonus valens*	Pines	California, statewide	Activity was common in drought-stressed pines in southern California, but slight in northern California.
Jeffrey pine beetle *Dendroctonus jeffreyi*	Jeffrey pine	California, statewide	Damage continued for the 4th year in northeastern California, and also increased in the southern Sierra Nevada and in southern California. High levels of tree mortality occurred near Truckee in Sierra and Nevada Counties and at Lake Tahoe, El Dorado County. Localized mortality occurred in Mineral King, Sequoia-Kings Canyon National Parks, Tulare County, and Alpine Forest Park, Kern County.
California flatheaded borer *Melanophila californica*	Pines	Southern California	Activity was associated with mortality of Jeffrey and Coulter pines in Riverside, San Diego, and San Bernardino Counties.
Flatheaded fir borer *Melanophila drummondi*	Douglas-fir	Northern California	Mortality associated with this borer continued at the site of the 1977 Hog Fire in Siskiyou County and along the Scott, Klamath, and Trinity River drainages.

[1] Includes forests in California and Hawaii.

PACIFIC SOUTHWEST REGION (R-5) - continued.

Insect	Host	Location	Remarks
A budworm *Choristoneura carnana californica*	Douglas-fir	Northern California	This budworm defoliated Douglas-firs at variable intensities over approximately 33,000 acres near Clair Engle (Trinity) Lake, Trinity County. This was the second known report of defoliation by this insect and the first that involved such an extensive area.
Gypsy moth *Lymantria dispar*	Hardwoods, ornamentals	California, localized	Over 100 detections were made in 14 counties, with the greatest concentration in the San Francisco Bay area.
Fruittree leafroller *Archips argyrospilus*	California black oak and other hardwoods	Southern California	Damage in San Bernardino County declined to about 2,000 acres of light to moderate defoliation in the Lake Gregory, Forest Falls, and Running Springs areas.
Pandora moth *Coloradia pandora*	Jeffrey pine	Southern California	Except for moths captured in a light trap near Happy Camp, Siskiyou County, reports were confined to the infestation on the Inyo National Forest, Mono County. The number of moths flying and the length of the flight period in Mono County were reduced relative to the 1980 flight.
Lodgepole needleminer *Coleotechnites milleri*	Lodgepole pine	Yosemite National Park	Moderate to heavy defoliation continued in the greater Tuolumne Meadows area. Population levels decreased in many areas heavily defoliated in recent years.
Douglas-fir tussock moth *Orgyia pseudotsugata*	White fir	Northern and central California	Larval populations surveyed were low and nondamaging. One unusual find occurred on the Six Rivers National Forest, Trinity County.
Jeffrey pine needleminer *Coleotechnites* sp.	Jeffrey pine	Southern California	The area of damage in San Bernardino County remained similar to that in 1981--about 2,000 to 3,000 acres.
Pine needle sheathminer *Zellaria haimbachi*	Ponderosa pine	Northern California	Defoliation continued in the Big and Little Humbug plantations, Klamath National Forest, Siskiyou County. Some terminal shoots died.
Eurasian pine aphid *Pineus pini*	Pines	Hawaii	The population of this important insect remained low because of the chamaemyiid predator, *Leucopis obscura* Hal., which was first released in 1976.
Spiraling whitefly *Aleurodicus dispersus*	Ornamentals, shade trees, fruit trees	Hawaii	Populations of this pest remained in check since the release of several biological control agents from tropical America, notably *Nephaspis amnicola* Wingo and *Encarsia* spp.

PACIFIC SOUTHWEST REGION (R-5) - continued.

Disease	Host	Location	Remarks
Stem and Branch			
Dwarf mistletoes *Arceuthobium* spp.	Ponderosa pine, Jeffrey pine, true fir, other conifers	California, statewide	Dwarf mistletoes were major pests, infesting about 21 percent (some 2.2 million acres) of the commercial forest land in California.
True mistletoes *Phoradendron* spp.	Hardwoods, white fir	Southern California	Widespread infection of hardwoods in high-use campgrounds caused growth reduction, increased susceptibility to drought, and loss of vegetative cover.
White pine blister rust *Cronartium ribicola*	Sugar pine	Northern and central California	Several new reports of the disease from the southern Sierra Nevada were part of the continuing spread and intensification of the rust that began in the mid-1960's. On the Sierra National Forest, five previously unreported infection centers were found, along with evidence that the rust has spread and intensified rapidly in the past decade.
Tip blight *Diplodia pinea*	Pines	Hawaii	Dieback continued on Molokai despite improved growing conditions.
Root Disease			
Annosus root rot *Heterobasidion annosum*	Conifers	California, statewide	Detected on over 500 M acres of true fir type in northern California, infecting over 6 million live true fir (174 MM cu. ft.) >4" dbh. Involved in the deaths of 500 M true fir (3.845 MM cu. ft.) >4"dbh, or 19 percent of all recently killed true fir. Detected in 53 percent of the campgrounds with true fir and in 35 percent of the campsites.
Black-stain root disease *Ceratocystis wagneri*	Pines, Douglas-fir	Northern and central California	New reports of the disease expanded its range in both the Coast Range and the Sierra Nevada.
Foliage Disease			
Elytroderma disease *Elytroderma deformans*	Ponderosa pine, Jeffrey pine	California, statewide	Levels of infection have generally declined since the early 1970's. An increase in disease was reported from near Hume Lake, Fresno County.
Sycamore anthracnose *Gnomonia veneta*	California sycamore	California, statewide	Because of the long, wet spring, the disease was common but caused little damage.
Acacia rust *Uromyces digitatus*	Koa and koaia	Hawaii	Widespread on most islands, but little damage was done.
Acacia rust *Uromyces koae*	Koa	Hawaii	Widespread. Damaging to young koa.
White fir needle cast *Lirula abietis-concoloris*	White fir	Central California	Moderate levels of the disease were reported in the mixed conifer type on the Georgetown Divide in El Dorado County.

PACIFIC SOUTHWEST REGION (R-5) - continued.

Disease	Host	Location	Remarks
Vascular Wilt			
Dutch elm disease *Ceratocystis ulmi*	Elms	Central California	Remained confined to eight San Francisco Bay Area Counties.
Nursery Disease			
Fusarium oxysporum	Sugar, ponderosa, and Jeffrey pines; true fir	Northern and central California	A major disease problem in California nurseries: reported on sugar pine at Placerville Nursery and at Chico Tree Improvement Center; on red and white fir at Humboldt Nursery; and on Douglas-fir at Arcata Lumber Company Nursery.
Phomopsis canker *Phomopsis lokoyae*	Western hemlock, Douglas-fir	Northern California	Phomopsis canker resulted in about 80 percent loss of 1-0 western hemlock at Humboldt Nursery, but caused only minor damage to the Douglas-fir.
Cedar leaf blight *Keithia thujina*	Western redcedar	Northern California	Caused minor damage to western red cedar at Humboldt Nursery. Cedar leaf blight had not been reported previously in California.
Tip blight and canker *Phoma* sp.	Red and white fir	Northern California	Disease caused the total economic loss of 1-0 true firs at Humboldt Nursery.
Abiotic			
Air pollution	Ponderosa pine, Jeffrey pine	Central and southern California	Twenty-one of twenty-seven air pollution injury plots in the southern Sierra Nevada showed increased symptoms compared to 1977. Ozone symptoms on the Eldorado National Forest were less severe than in the southern Sierra.

PACIFIC NORTHWEST REGION (R-6)[1]

Insect	Host	Location	Remarks
Mountain pine beetle *Dendroctonus ponderosae*	Lodgepole, ponderosa, white, and sugar pines	Oregon, Washington	This beetle is still the most destructive tree killer in the Pacific Northwest. About 24.4 million cubic feet of timber were killed on 789,490 acres. Tree mortality continued to decline in older areas of the outbreak in northwest Oregon, primarily because the most suitable host material has already been killed.
Douglas-fir beetle *Dendroctonus pseudotsugae*	Douglas-fir	Oregon, Washington	Damage east of the Cascade mountains remains low with 10,130 infested acres mapped in 1982. Activity west of the Cascades was again very low in 1982. Damaged and dead timber resulting from the 1980 eruption of Mount St. Helens has caused few beetle population increases of significance.
Spruce beetle *Dendroctonus rufipennis*	Engelmann spruce	Washington	Low level to moderate losses occurred in some stands in north-central Washington.
Pine engraver *Ips pini*	Pines	Oregon, Washington	Activity continues at a low level. Regionwide, 7,410 acres were infested in 1982.
Fir engraver *Scolytus ventralis*	True firs	Oregon, Washington	Acreage infested totaled 6,850 acres in the Region. Most of the mortality occurred on the east slope of the Cascade Range in Washington. In Oregon, most damage was in the Blue Mountains on the Umatilla National Forest.
Western pine beetle *Dendroctonus brevicomis*	Ponderosa pine	Oregon, Washington	Tree mortality continued at a low level with 21,030 acres infested and 470 MCF of timber killed. Some activity has occurred on all Forests and Indian Reservations within the host range.
Balsam woolly aphid *Adelges piceae*	Firs	Washington	Infestations continued to decrease, going from 18 infestation centers in 1981 to 6 in 1982.
Douglas-fir tussock moth *Orygia pseudotsugata*	Douglas-fir, true firs, spruce	Washington	Populations continue to increase in northeast Washington, where 1,550 acres of light to heavy defoliation were mapped in 1982. Surveys elsewhere in the Region show a static to downward trend in population levels.
Western spruce budworm *Choristoneura occidentalis*	Douglas-fir, true firs, spruce	Oregon, Washington	Defoliation increased from 3,402,690 to 1,540,000 in 1982. In Oregon, activity was on the Malheur, Ochoco, Umatilla, and Wallowa-Whitman National Forests and adjacent lands. In Washington, populations appear to be decreasing, with only 9,000 acres of defoliation mapped.

[1] Includes forests in Oregon and Washington.

PACIFIC NORTHWEST REGION (R-6) - continued.

Insect	Host	Location	Remarks
Modoc budworm *Choristoneura viridis*	True firs	Oregon	Moderate defoliation occurred on about 5,000 acres in southern Oregon.
Pine butterfly *Neophasia menapia*	Ponderosa pine	Oregon	Damage was reported in three pockets on the Ochoco National Forest and the Warm Springs Indian Reservation. This is the first report of defoliation by this insect in the Region since annual aerial surveys were begun in 1947.
Larch casebearer *Coleophora laricella*	Larch	Oregon, Washington	Some heavy defoliation occurred in the central Oregon Cascades. Elsewhere, populations were generally lower than last year.
Cone and seed insects various spp.	Douglas-fir	Oregon, Washington	West of the Cascades, cone crops were generally good with high seed set. Cone and seed insect impact on viable seed in producing seed orchards ranged from 4 to 10 percent.

PACIFIC NORTHWEST REGION (R-6) - continued.

Disease	Host	Location	Remarks
Stem and branch			
Dwarf mistletoes *Arceuthobium* spp.	Douglas-fir, larch, ponderosa pine, lodgepole pine, true firs, hemlock	Oregon, Washington	Dwarf mistletoes caused an estimated loss of 132.7 million cubic feet of timber in Oregon and Washington in 1982.
White pine blister rust *Cronartium ribicola*	Western white pine, sugar pine	Oregon, Washington	This continues to be the most important disease of western white and sugar pines in the Region. Gains are being made through identification of resistant trees and ratings of sites for infection hazard.
Root Disease			
Laminated root rot *Phellinus weirii*	Douglas-fir, grand fir, white fir	Oregon, Washington	This root rot causes serious losses both east and west of the Cascade crest. About 5 percent of the west side Douglas-fir type is estimated to have been removed from production by this disease.
Black-stain root disease *Ceratocytis wageneri*	Douglas-fir	Oregon, Washington	Numerous findings have been made in second growth Douglas-fir stands.
Phytophthora root rot *Phytophthora lateralis*	Port-Orford-Cedar	Oregon	Continues to cause widespread mortality in southwestern Oregon.
Shoestring root rot *Armillariella mellea*	Mixed fir and pine forest type	Oregon, Washington	Continues to appear throughout the Region.
Annosus root rot *Heterobasidion annosum*	Western hemlock, white fir, grand fir, lodgepole pine	Oregon, Washington	Extensive losses have occurred in many partially cut white fir stands in southern and eastern Oregon.
Foliage Disease			
Swiss needle cast *Phaeocryptopus gaumanni*	Douglas-fir	Oregon, Washington	Widespread throughout western Washington and northwestern Oregon. Christmas tree plantations are most severely affected.
Nursery/Seed Orchard			
Phytophthora root rot *Phytophthora* spp.	Douglas-fir	Oregon, Washington	Found in several nurseries in Oregon and Washington. Infection and mortality were primarily in the low or poorly drained areas of nursery beds.
Fusarium root rot *Fusarium oxysporum*	Sugar pines, Douglas-fir	Oregon	Caused sugar pine seedling mortality at the J. Herbert Stone Nursery and Douglas-fir seedling mortality in the Wind River Nursery.

SOUTHERN REGION (R-8)[1]

Insect	Host	Location	Remarks
Southern pine beetle *Dendroctonus frontalis*	Southern pines	Southwide	Extremely low southern pine beetle populations in the spring increased to epidemic levels on 7,327,500 acres of host type. Alabama, Arkansas, Georgia, Louisiana, Mississippi, Texas, and South Carolina were affected during late summer and fall. Approximately 5,367 thousand cubic feet of timber had been salvaged by October. Approximately 20 percent of this beetle-killed timber was salvaged from National Forest land. Spots tended to be large with a high green to red infested tree ratio. This indicated increasing populations during a period when they usually decrease.
Ips (*Ips* spp.) and black turpentine beetle, *Dendroctonus terebrans*	Pine	Southwide	Scattered moderate to high activity, especially where drought during 1981 has predisposed trees to attack.
Balsam woolly aphid *Adelges piceae*	Fraser fir	Southern Appalachians	Continues to cause mortality throughout the range of Fraser fir in the southern Appalachians (except on Mt. Rogers).
Webbing coneworm *Dioryctria disclusa*	Loblolly pine	North Carolina, South Carolina	Populations remained high in pine seed orchards as evidenced by pheromone trap catches.
Southern pine coneworms *Dioryctria amatella* *Dioryctria clarioralis* *Dioryctria merkeli*	Loblolly pine	Southwide	These species continue to cause significant damage in seed orchards.
Slash pine thrips *Gnophothrips fuscus*	Slash pine	Florida, Georgia, and Gulf Coast of Alabama and Mississippi	Flower mortality variable between orchards. One untreated orchard reported 60 percent damage to the 1982 flower crop.
White pine cone beetle *Conopthorus coniperda*	Eastern white pine	North Carolina	Low level populations in seed orchards.
Pine cone borers *Eucosma* spp.	Slash pine	Florida	Low level populations in seed orchards.
Seedbugs *Leptoglossus corculus* *Tetyra bipunctata*	Southern pines	Southwide	Populations increasing in many seed orchards.

[1] Includes forests in Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, and Virginia.

Insect	Host	Location	Remarks
Gypsy moth *Lymantria dispar*	Hardwoods	Alabama, Arkansas, Florida, North Carolina, South Carolina, Tennessee, Virginia	Gypsy moth activity increased significantly. In Virginia, the northern tier of counties is now considered in the generally infested area. Multiple life stages have been reported from Arlington to Newport News, Virginia. Based on 1982 trappings, 14 new counties in Virginia were declared infested. Outside the generally infested area, two counties in Virginia, one county in South Carolina, one county in Alabama, one county in Arkansas, and two counties in North Carolina conducted eradication programs. Seventeen counties in Florida, thirty-six in North Carolina, two in South Carolina, two in Georgia, eight in Virginia, and three in Tennessee had multiple male moth catches, but gypsy moth is not yet considered to be established in these counties.
Texas leafcutting ant *Atta texana*	Pine	Texas, Louisiana	This pest caused serious losses in pine regeneration on deep, sandy soils. Pine seedlings were destroyed on 4,000 acres in Texas and 500 acres on the Kisatchie National Forest. An additional 417,000 seedlings were killed on private lands in Louisiana.
Reproduction weevils *Hylobius pales* *Pachylobius picivorus*	Various southern pines	Florida, Oklahoma, Mississippi	A 60,000-acre area in Taylor County, Florida, was heavily infested following damage by hail storm. One hundred acres of pine seedlings were killed in Mississippi. In association with tip moth damage and drought, 16 acres of loblolly pine were 50 percent damaged in southeastern Oklahoma.
Introduced pine sawfly *Diprion similis*	Eastern white pine	North Carolina, Virginia, Tennessee	Although infestations are continuing to spread, especially in Virginia, populations are at lowest level in 4 years because of parasitism by *Monodontomerus dentipes*.
Virginia pine sawfly *Neodiprion pratti pratti*	Virginia, loblolly, and shortleaf pines	North Carolina	Infestations in the Piedmont area are causing growth reduction but no mortality.
Loblolly pine sawfly *Neodiprion taedae linearis*	Southern yellow pines	Tennessee, Louisiana, Arkansas	Scattered light to heavy defoliation in western and middle Tennessee. Light defoliation on 1,000 acres in Louisiana. Heavy sawfly damage near Camden, Arkansas.
Redheaded pine sawfly *Neodiprion lecontei*	Various southern yellow pines	Florida, Arkansas	Five hundred acres defoliated on the Ocala National Forest. Several reports of infestations near Batesville, Arkansas.

Insect	Host	Location	Remarks
Blackheaded pine sawfly *Neodiprion excitans*	Loblolly pine, slash pine	Texas, Florida, Mississippi, Louisiana	In Florida, 1,600 acres defoliated with some mortality occurring due to *Ips* infestations. Scattered defoliation in Louisiana and Mississippi.
Unidentified sawfly *Neodiprion* spp.	Ponderosa pine, Douglas-fir	Texas	Light defoliation of 1,000 acres in Guadalupe Mountains National Park.
Bagworm *Thyridopteryx ephemeraeformis*	Eastern white pine and red cedar	North Carolina	Locally heavy populations on white pine in the mountains and on red cedar in the Piedmont.
Pine tip moths *Rhyacionia frustrana* *Rhyacionia rigidana*	Loblolly, shortleaf, and Virginia pines	South Carolina, Texas, Arkansas	High populations affecting growth in the Piedmont of South Carolina. Unusually high populations in northeastern Texas, especially on Virginia pine in Christmas tree plantations. Populations unusually high in Arkansas.
Pine leaf chermid *Pineus pinifoliae*	Eastern white pine	North Carolina	Becoming more common.
Forest tent caterpillar *Malacosoma disstria*	Various hardwoods	North Carolina, Virginia, South Carolina, Alabama, Louisiana	Severe outbreaks were detected on 25 million acres in the Coastal Plain of South Carolina. Declining populations in Virginia. Infestation more extensive than usual in Alabama. Defoliation lowest since 1969 in Louisiana.
Fall cankerworm *Alsophila pometaria*	Various hardwoods	South Carolina, North Carolina, Tennessee	In South Carolina, 2,000 acres infested. Outbreak severe in the Coastal Plain and and Piedmont of North Carolina.
White-marked tussock moth *Orgyia leucostigma*	Oaks	Florida, South Carolina	Light to severe defoliation of 800 acres in Nassau County, Florida. On the Coastal Plain of South Carolina, 11,000 acres defoliated.
Eastern tent caterpillar *Malacosoma americanum*	Various hardwoods, especially black cherry	Virginia, Alabama, Arkansas	Widespread defoliation and high population levels.
Walnut caterpillar *Datana integerrima*	Black walnut, pecan	Oklahoma	Locally high populations.
Locust leafminer *Odontata dorsalis*	Black locust	North Carolina, Virginia	Widespread severe defoliation.
Fall webworm *Hyphantria cunea*	Various hardwoods	North Carolina, Virginia, Alabama, Arkansas, Louisiana, Oklahoma, Texas	Widespread infestations caused severe defoliation. Populations increased from 1981.

Disease	Host	Location	Remarks
Stem and Branch			
Fusiform rust *Cronartium quercuum* f. sp. *fusiforme*	Slash and loblolly pines	Throughout host range	Continued widespread problem. Forest management plans disrupted in some areas due to heavy rust infection in intensively managed plantations. Severity in some pine plantations has necessitated clearcutting before age 15.
White pine blister rust *Cronartium ribicola*	Eastern white pine	Virginia, North Carolina	Sanitation inspections continue on proposed planting sites.
Comandra blister rust *Cronartium comandrae*	Loblolly pines	Tennessee	Over 15 percent infection in a 30-acre planting.
Pitch canker *Fusarium moniliforme* var. *subglutinans*	Slash, shortleaf, longleaf, loblolly, and Virginia pines	Alabama, Mississippi, Louisiana, Florida, Georgia, North Carolina, Arkansas	Disease at endemic levels, except in loblolly stands in eastern North Carolina where disease, associated with tip moth damage, is severe. Diseased trees removed from 273 acres on industrial land in Arkansas by clearcutting.
Decay, primarily fungi in the fungal family, Polyporaceae	Hardwoods, conifers	Southwide	Continues to cause substantial though unquantified losses. Increase in fires and drought during the last few years should result in increasing damage to hardwoods in subsequent years.
Chestnut blight *Endothia parasitica*	American chestnuts and hybrids	Throughout host range	Chinese chestnuts in older North Carolina plantings have disease-free individuals. Hybrids in Kentucky planting devastated.
Endothia blight *Endothia* spp.	*Eucalyptus* species	Florida	Currently known to occur in Tampa Bay area. Distribution and significance unknown.
Cytospora canker *Cytospora kunzei*	Red spruce, balsam fir	Tennessee	Branch and tree mortality seen.
Hypoxylon canker *Hypoxylon atropunctatum*	Red oak group	Southwide	Common on drought-weakened and killed trees throughout the South. Occurs in urban and forest trees.
Root Disease			
Annosus root rot *Heterobasidion annosum*	Southern yellow pines	Southwide	Continued to be the most serious root rot concern. Caused damage in thinned forest stands. Southern pine beetle often associated with diseased trees. Increasingly observed in Alabama and Mississippi. Also, occasionally found associated with root-damaged seed orchard trees.
Sand pine root disease *Phytophthora cinnamomi* *Inonotus circinatus* *Verticicladiella procera* *Phaeolus schweinitzii*	Sand pine	Florida, Georgia, South Carolina	Widespread in Florida with low levels of damage in plantings outside Florida. *P. cinnamomi* most commonly isolated. Losses can exceed $5 per acre per year.

Disease	Host	Location	Remarks
Root rot *Armillariella mellea* *Armillariella tabescens* *Phaeolus schweinitzii* *Phytophthora* spp.	All species	Southwide	Common pathogens in the area, especially on stressed or shallow-rooted trees. No new reports of severe damage.
Littleleaf disease *Phytophthora cinnamomi*	Shortleaf pine	Alabama, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee, Virginia	Continued common occurrence in Piedmont shortleaf stands on heavy soils. This disease contributes to occurrence of southern pine beetle infestations.
White pine decline *Verticicladiella procera*	Eastern white pine	Virginia, North Carolina, Tennessee, Kentucky	Frequent occurrence in urban plantings associated with physical stress (soil compaction, sod competition, others). Also, occasionally found associated with root-damaged seed orchard trees.
Root rot *Ganoderma tsugae* *G. lucidum*	Loblolly pine, oak	Southwide	Appeared to be active on droughty sites. No new reports of severe damage.
Phytophthora root rot *Phytophthora cinnamomi*	Turkey oak	Florida	Damaging forest stands on dry, sandy sites with *Armillariella (Clitocybe) tabescens.*
Foliage Disease			
Sycamore anthracnose *Gnomonia veneta*	American sycamore	Throughout host range	No serious defoliation or dieback reported.
Walnut anthracnose *Gnomonia leptostyla*	Black walnut	Throughout host range	Widespread due to wet spring.
Needle cast *Lophodermium* spp.	Southern yellow pines	Southwide	Widespread, sometimes locally severe, causing partial defoliation of affected trees. An extremely noticeable problem; greatest impact is on visual quality in parks and on Christmas tree plantings. Common in urban areas and shelterbelts.
Needle blight *Dothistroma* sp.	Austrian pine	Oklahoma	Light infection throughout host range.
Brown spot *Scirrhia acicola*	Longleaf and slash pines	Throughout host range	
Vascular Wilt			
Oak wilt *Ceratocystis fagacearum*	Oak	Arkansas, Oklahoma, Texas, Tennessee, Kentucky, North Carolina, Virginia	Disease remains at endemic levels in several southern States. Incidence increased in Virginia and North Carolina, but decreased in Tennessee. Disease is currently epidemic in central Texas with known occurrence in 20 counties. The average size infection center in the outbreak area is 10 acres.

SOUTHERN REGION (R-8) - continued.

Disease	Host	Location	Remarks
Dutch elm disease *Ceratocystis ulmi*	American elm, other elm species	Southwide, except Louisiana and Florida	Scattered single tree reports. Common along drainages in eastern and central Oklahoma. Increased incidence in Virginia.
Mimosa wilt *Fusarium oxysporum*	Mimosa	Throughout host range	Continued mortality.
Pinewood nematode *Bursaphelenchus xylophilus*	Many pine species	Southwide	This pest now appears to be endemic to the United States. New reports on slash pine, six native pines, and one introduced pine species in Tennessee.
Nursery/Seed Orchard			
Pitch canker *Fusarium moniliforme* var. *subglutinans*	Slash and loblolly pines	Virginia, Georgia, Florida nurseries; Virginia, Georgia, Florida, Mississippi, Louisiana, Arkansas, Alabama, North Carolina South Carolina seed orchards	Seedborne, low levels in seedbeds. Seed orchards continue to sustain sporadic damage.
Damping-off *Pythium*, *Phytophthora*, *Fusarium*, and *Rhizoctonia* spp.	Many species	Southwide	Particularly severe on eastern white pine seedlings in Tennessee; associated with herbicide injury. Also on black locust seedlings in Kentucky.
Walnut anthracnose *Gnomonia leptostyla*	Black walnut	South Carolina	Severe defoliation in mid-season.
Phytophthora root rot *Phytophthora* spp.	Sand pine, loblolly pine, black walnut	Georgia, South Carolina, Tennessee, Alabama, Louisiana, Arkansas	Present in nonfumigated nursery areas, particularly in nursery annexes. Sand pine in Georgia lightly affected. Heavy losses were avoided in black walnut in Tennessee through control efforts.
Rhizoctonia needle blight *Rhizoctonia solani* and other species	Loblolly pine, longleaf pine	Florida	Loblolly seedlings affected in rain-puddled areas. *Macrophomina phaseolina* also associated with blighted longleaf seedling foliage.
Cylindrocladium root rot *Cylindrocladium* spp.	Sweetgum, Shumard oak	South Carolina, Louisiana	Scattered mortality in nurseries.
Root-knot nematode *Meloidogyne* spp.	Dogwood	Florida	Heavy losses in unfumigated seedbeds. Losses occurred in outplantings. *M. phaseolina* also associated.

SOUTHERN REGION (R-8) - continued.

Disease	Host	Location	Remarks
Fusiform rust *Cronartium quercuum* f. sp. *fusiforme*	Slash, loblolly, and longleaf pines	Southwide, especially in Gulf and South Atlantic Coast Regions	Good control obtained in nurseries with an effective spray program.
Diplodia blight *Diplodia pinea*	Austrian pine	Oklahoma	Low incidence in nurseries. Slight damage reported.
Tip blight *Phomopsis* and *Fusarium* spp.	Slash, longleaf, loblolly, and sand pines	Mississippi, Texas, Louisiana	Low incidence in 10 nurseries; tending to subside in late summer.
Fusarium root rot *Fusarium* spp.	Loblolly pine	Arkansas, Texas, Louisiana	Highest incidence in nurseries where poor drainage or chemical injury to roots occurred.
Abiotic			
Oak decline	Oak	Southwide	Caused by drought, followed by insects and a variety of disease organisms. Continued common occurrence southwide. Severe in localized areas; for example, 1,700 acres affected on George Washington National Forest (associated with 1981 drought and 3 years of defoliation by native insects).
Drought	Many species of pines and hardwoods	General (but localized) throughout the South	Caused wilting, leaf fall, and death of severely stressed trees. Created opportunity for many facultative pathogens (for example, *Hypoxylon* spp. and *Cytospora* sp.). Dieback and mortality resulted from recent droughts and localized conditions.
Ice and snow	Pines	North Carolina, Georgia, Tennessee, Mississippi, Louisiana	Root springing, top breakage, and stem bending due to ice and snow loading.
Winter kill	Loblolly pine, shortleaf pine, *Eucalyptus* spp., black locust	Virginia, North Carolina, Tennessee, Florida	Trees affected in urban plantings, seed orchards, and forest stands. In south Florida, 100 percent kill of *Eucalyptus* species on 15,000 acres. Affected stems have resprouted.
Winter burn	Loblolly pine, Shortleaf pine	Kentucky	Trees damaged where exposed to wind.

EASTERN REGION (R-9)[1] AND NORTHEASTERN AREA

Insect	Host	Location	Remarks
Gypsy moth *Lymantria dispar*	Oaks, other hardwoods	Connecticut, Delaware, Maine, Massachusetts, Michigan, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, Maryland	The total acreage for the areas of moderate to heavy defoliation decreased this year. Area wide, 8.2 million acres were defoliated in 1982 compared to the 12.9 million acres defoliated in 1981, a 36 percent decrease. This acreage represents the second highest amount of defoliation ever recorded.
Spruce budworm *Choristoneura fumiferana*	Balsam fir, spruces, hemlock	Maine, New Hampshire, Vermont, Michigan, Minnesota, Wisconsin,	With the exception of Vermont, spruce budworm populations and associated defoliation decreased again in 1982--similar decreases were reported in 1981. Approximately 4.2 million acres were defoliated in the Eastern United States. In Maine, the defoliated area decreased slightly to 3.8 million acres. In Michigan, populations are low again for the second year. Populations also remained low in New York and Wisconsin. About 39,000 acres of defoliation were reported from New Hampshire. In Vermont, defoliation increased to 154,000 acres.
Forest tent caterpillar *Malacosoma disstria*	Aspen, oak, maple, beech, basswood, ash	Maine, Minnesota, New York, Vermont, Wisconsin	About 7.5 million acres were defoliated in Maine; populations are beginning to collapse after 3 years of defoliation. In Vermont, defoliation was 325,000 acres and New York's defoliation totaled almost 200,000 acres. Only 250,000 acres of light defoliation were noted in Minnesota, and in Wisconsin, defoliation was barely detectable.
Jack pine budworm *Choristoneura pinus*	Jack pine, red pine	Minnesota, Michigan, Wisconsin	An estimated 624,464 acres of moderate to severe defoliation were recorded in Michigan--nearly double the 1981 figure. The situation in Minnesota remains static with 11,000 acres in four counties infested. In Wisconsin, 135,000 acres of, mostly light defoliation were detected.
Saddled prominent *Heterocampa guttivitta*	Maple, beech, birch, ash, cherry	Maine, New Hampshire, New York, Pennsylvania, Vermont	Only 10,000 acres were reported from Maine--a decrease from the 186,000 acres of 1981. A similar situation was noted in New Hampshire, where populations collapsed from the record level of 500,000 acres defoliated last year. Low populations were noted in New York and northern Vermont. In Pennsylvania, populations are increasing, with about 2,000 acres defoliated in 1982.

[1] Includes forests in Connecticut, Illinois, Indiana, Iowa, Maryland, Massachusetts, Michigan, Minnesota, Missouri, New Hampshire, Maine, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, Vermont, West Virginia, and Wisconsin.

Disease	Host	Location	Remarks
Stem and Branch			
Beech bark disease *Cryptococcus fagisuga*; *Nectria coccinea* var. *faginata*	American beech	Pennsylvania, Vermont	Incidence in northern and eastern part of Pennsylvania appears to be increasing with about 5 percent mortality in 1982. Light mortality reported statewide in Vermont.
European larch canker *Lachnellula willkommii*	Eastern larch	Maine	Found in six new townships in coastal Washington County, Maine, for a total of 12 since its discovery in 1981; some tree mortality in Cutler and Jonesboro Townships.
Scleroderris canker *Gremmeniella abietina*	Jack pine, red pine, Scotch pine	Wisconsin, Michigan, Minnesota, New York, Vermont, New Hampshire, Maine	Lakes States (North American strain)--stable to declining; difficult to detect in most plantations. Northern States (European strain)--stable to declining; one new infection center of 30 acres in Washington County, Maine.
Foliage Disease			
Pine needle rust *Coleosporium* spp.	Jack pine, red pine		Widespread and common in northern parts of Lake States; 2-3 acres of Christmas trees lost in Menominee County, Michigan; on Nicolet National Forest, Wisconsin, one red pine plantation was 100 percent infected and suffered substantial mortality from needle rust and deer browsing combined.
Vascular Wilt			
Oak wilt *Ceratocystis fagacearum*	Oak	Iowa, Michigan, Minnesota, Missouri	Increased number of infection centers noted in Iowa. First reported in Menominee County, Michigan, in 1981; now located in 22 infection centers; 1,000 + trees lost. In Anoka and Sherburne Counties, Minnesota, 640 acres treated. Scattered infection centers statewide in Missouri; remains at endemic levels.
Pinewood nematode *Bursaphelenchus xylophilus*	Conifers	Areawide	Areawide except Maine, New Hampshire, and Rhode Island; levels similar to 1981; considered a native pest.
Abiotic			
Physiological needle droop	Red pine	Minnesota, Wisconsin	This abiotic disease, caused by water deficiency, occurred in plantations on the Superior National Forest, Minnesota, and Nicolet National Forest, Wisconsin; some seedling mortality also occurred in Roseau, St. Louis, and Lake of the Woods Counties, Minnesota.

Disease	Host	Location	Remarks
Other			
Maple decline	Sugar maple	Michigan, New York, Vermont, Wisconsin	Prevalent in Marquette and Menominee Counties, Michigan; primarily a problem in urban areas. Delaware County, New York, has 100,000 acres affected with mortality up to 100 percent. Common, especially on ornamentals, in Vermont. In Wisconsin, scattered top kill on sugar maple was noted in the northern part of the State.

ALASKA REGION (R-10)[1]

Insect	Host	Location	Remarks
Spruce beetle *Dendroctonus rufipennis*	White and Sitka spruce	Alaska	Infestations covered about 477,000 acres, a 100 percent increase over 1981 acreage.
Engraver beetle *Ips perturbatus*	White spruce	Alaska	Infestations decreased by 88 percent in interior Alaska with about 235 acres of scattered trees infested.
Ambrosia beetle *Trypodendron lineatum*	Spruce, hemlock	Alaska	Significant damage to spruce and hemlock occurred for the second consecutive year.
A spruce budworm *Choristoneura*, probably *orae*	White spruce	Alaska	Little damage detected in 1982.
Western blackheaded budworm *Acleris gloverana*	Hemlock	Alaska	Defoliation was detected on 1,250 acres in the Prince William Sound area. Populations were at low levels in southeast Alaska.
Spruce needle aphid *Elatobium abietinum*	Sitka spruce	Alaska	Populations at endemic levels throughout Alaska.

[1] Includes forests in Alaska.

Disease	Host	Location	Remarks
Stem and Branch			
Hemlock dwarf mistletoe *Arceuthobium tsugense*	Hemlock	Alaska	Remains the most damaging tree disease in old growth western hemlock in southeast Alaska.
Root Disease			
Cedar dieback	Cedar	Alaska	About 24,000 acres of dead and dying cedar observed this season.
Foliage Disease			
Spruce needle rust *Chrysomyxa ledicola*	White spruce	Alaska	Incidence of this rust decreased to 11,000 acres.
Abiotic			
Frost damage	Aspen	Alaska	Extensive frost damage occurred on 5,000 acres on the Kenai Peninsula.
Larch dieback	Larch	Alaska	Decreased to undetectable levels in 1982.

Table 1.--Trend in number of acres of aerially detected tree defoliation caused by the gypsy moth (Lymantria dispar) in the Northeastern United States

State	Year		Trend	
	1981	1982		
Connecticut	1,482,216	803,802	-	678,414
Delaware	500	1,265	+	765
Maine	655,841	574,537	-	81,304
Maryland	8,826	9,162 1/	+	336
Massachusetts	2,826,095	1,383,265	-	1,442,830
Michigan	18	92	+	74
New Hampshire	1,947,236	878,273	-	1,068,963
New Jersey	798,790	675,985	-	122,805
New York	2,303,914 2/	825,629	-	1,478,286
Pennsylvania	2,527,753	2,351,317	-	176,536
Rhode Island	272,556	658,000	+	385,444
Vermont	48,979	9,864	-	39,115
Total	12,872,725	8,171,191	-	4,701,634

1/ Includes 42 acres of light defoliation detected on Catoctin Mountain Park not reported by Maryland.

2/ Nassau County and New York City Counties were not surveyed, although defoliation did occur.

Table 2.--Trend in number of acres of aerially detected tree defoliation caused by spruce budworm (*Choristoneura fumiferana*) in Northeastern United States

State	Year		Trend
	1981	1982	
Maine	4,000,000	3,852,293	- 147,707
Michigan	161,000	129,140	- 31,860
Minnesota	110,000	126,700	+ 16,700
New Hampshire	42,000	39,000	- 3,000
Vermont	94,000	147,948	+ 53,948
Wisconsin	84,000	0	- 84,000
Total	4,491,000	4,295,081	- 195,919

Table 3.--Trend in number of acres of aerially detected tree defoliation caused by the western spruce budworm (*Choristoneura occidentalis*) in the Western United States

Region	Year		Trend
	1981	1982	
Region 1	931,953	2,256,311	+ 1,324,358
Region 2	1,768,000	2,003,181	+ 235,181
Region 3	477,960	368,485	- 109,475
Region 4	1,411,200	2,513,200	+ 1,102,000
Region 5	0	0	0
Region 6	342,690	1,540,000	+ 1,197,310
Total	4,589,113	8,681,177	+ 3,749,374

Table 4.--Status of dwarf mistletoe infection by host tree and Region 1/

Region	Host	Infected area	Percentage of commercial host type infected	Annual loss
		Acres		Thousand cubic feet 2/
Region 1	Lodgepole pine	1,705,000	29	18,210
	Douglas-fir	657,000	13	13,150
	Western larch	766,000	38	15,320
	All species	-- 3/	--	46,680
Region 2 4/	Lodgepole pine	879,000	51	9,560
	Ponderosa pine	--	--	8,700
	All species	--	--	18,260
Region 3 4/	Ponderosa pine	2,500,000	36	18,750
	Douglas-fir	270,000	50	5,870
	All species	2,770,000	--	24,750
Region 4 4/	Lodgepole pine	1,420,000	59	17,490
	Ponderosa pine	270,000	26	1,690
	Douglas-fir	910,000	30	16,680
	All species	2,600,000	--	35,860
Region 5	All species	2,810,000	21	122,130
Region 6	All species	8,460,000	23	148,000
Region 10	Western hemlock and black spruce	--	--	11,000
Northeastern Area	Black spruce	280,000	14	11,160
Total				417,840

1/ Drummond, David B. 1982. Timber Loss Estimates for the Coniferous Forests of the United States Due to Dwarf Mistletoes. U.S. Department of Agriculture, Forest Service, Methods Application Group, Report 83-2, 24 p.

2/ Includes growth reduction and tree mortality.

3/ -- = data not available.

4/ Includes only data from National Forest System lands. Commercial forest lands on State, private, and other Federal ownerships were not surveyed.

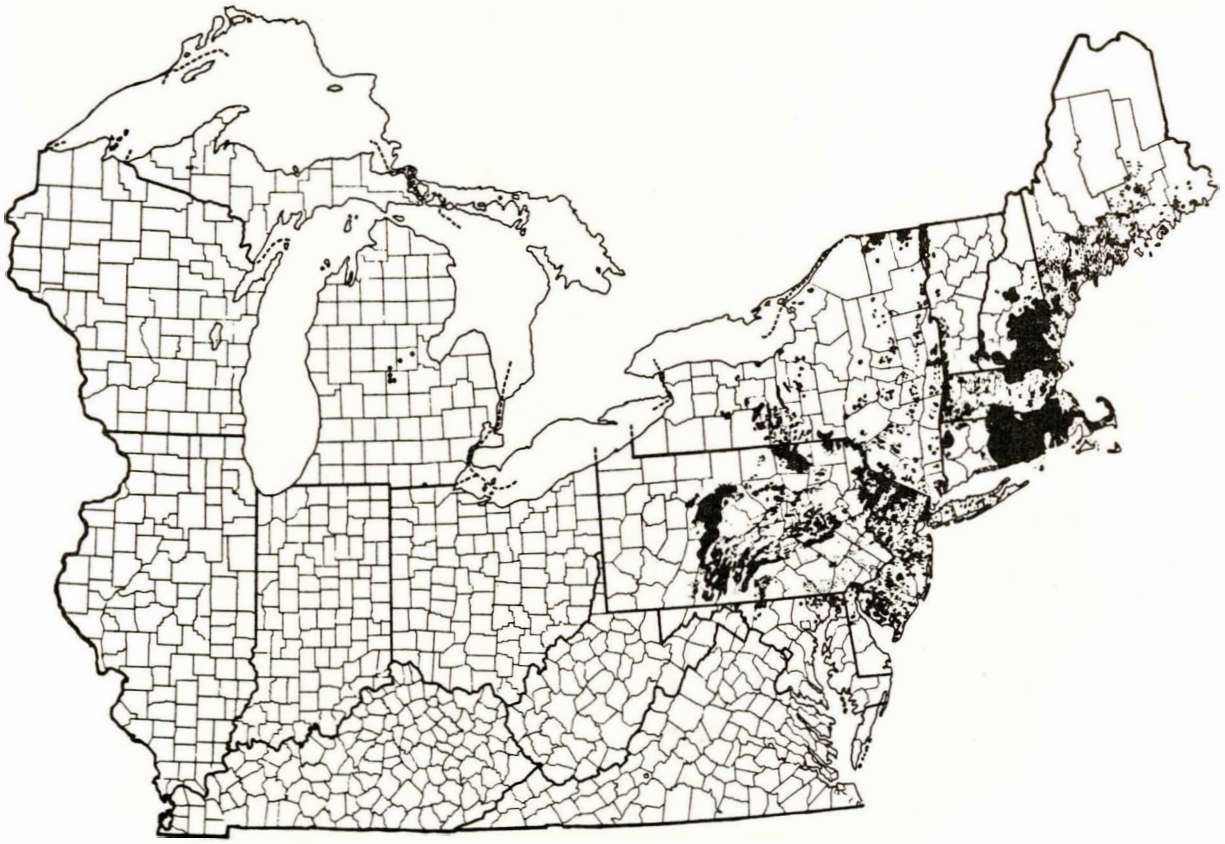

Figure 1.--Gypsy moth defoliation in the Northeast

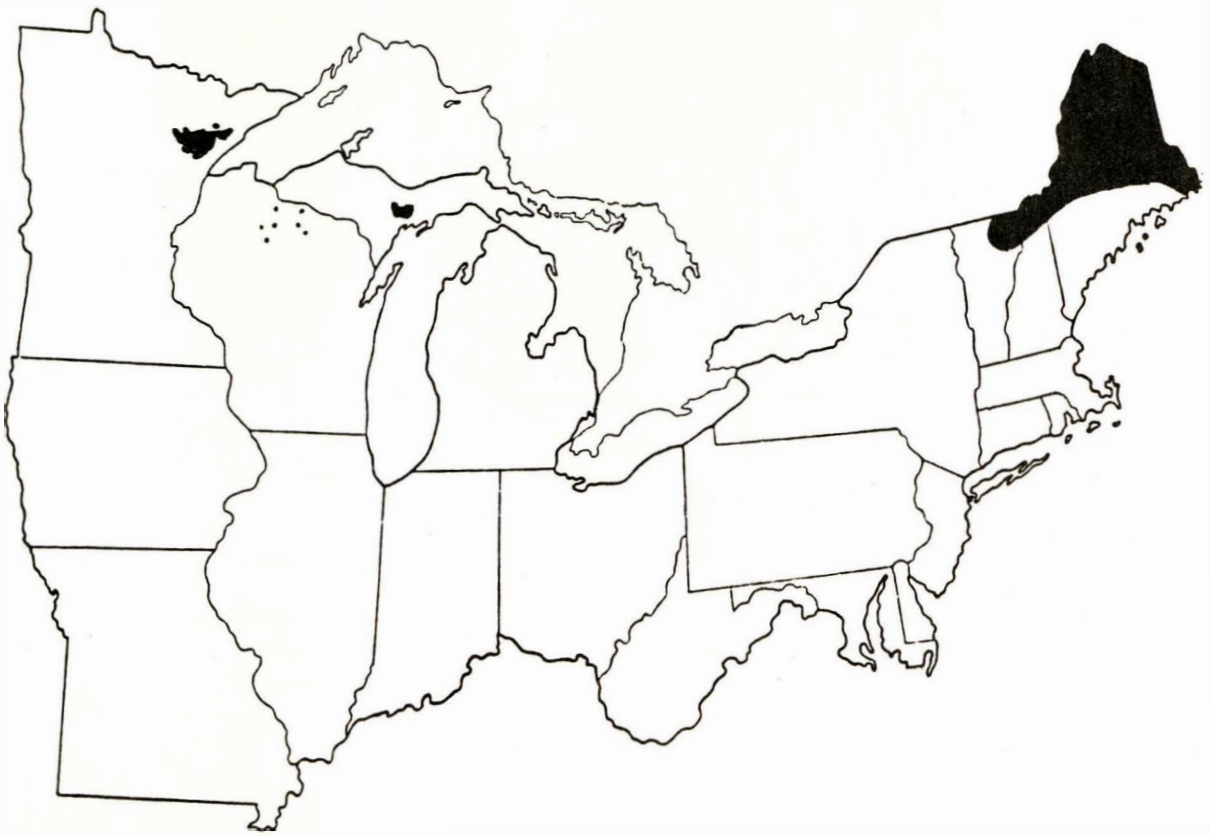

Figure 2.--Spruce budworm defoliation

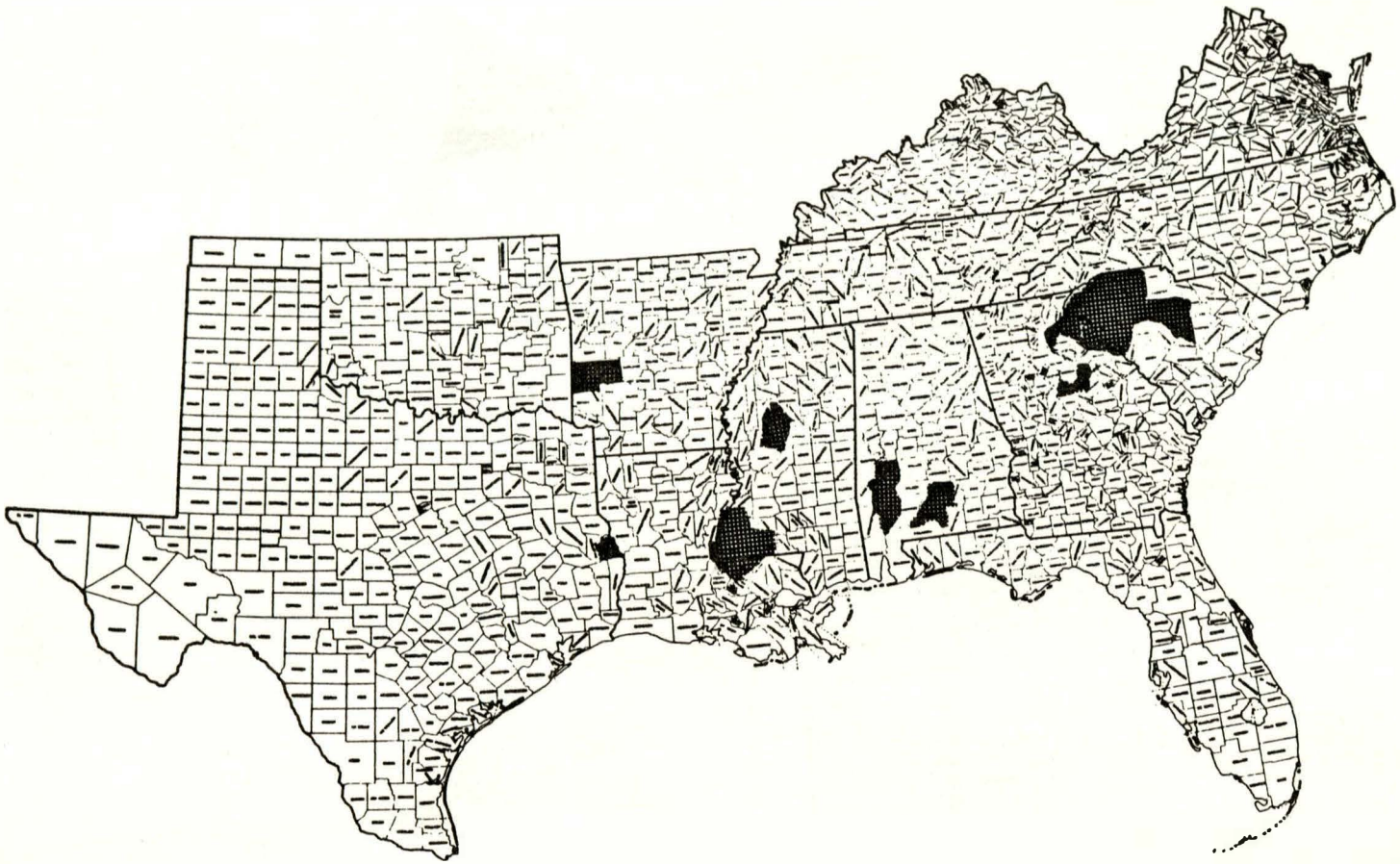

Figure 3.--Southern pine beetle-infested counties

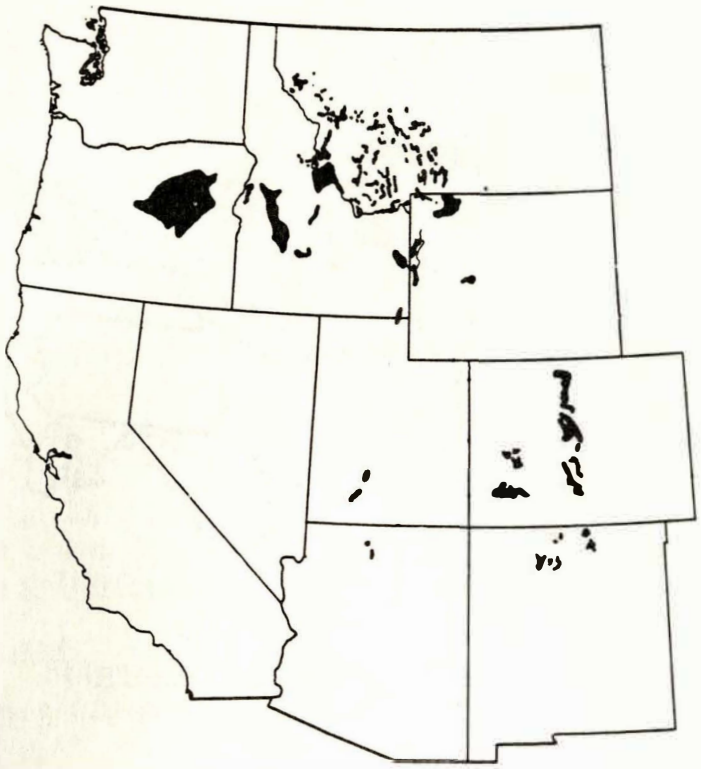

Figure 4.--Western spruce budworm defoliation

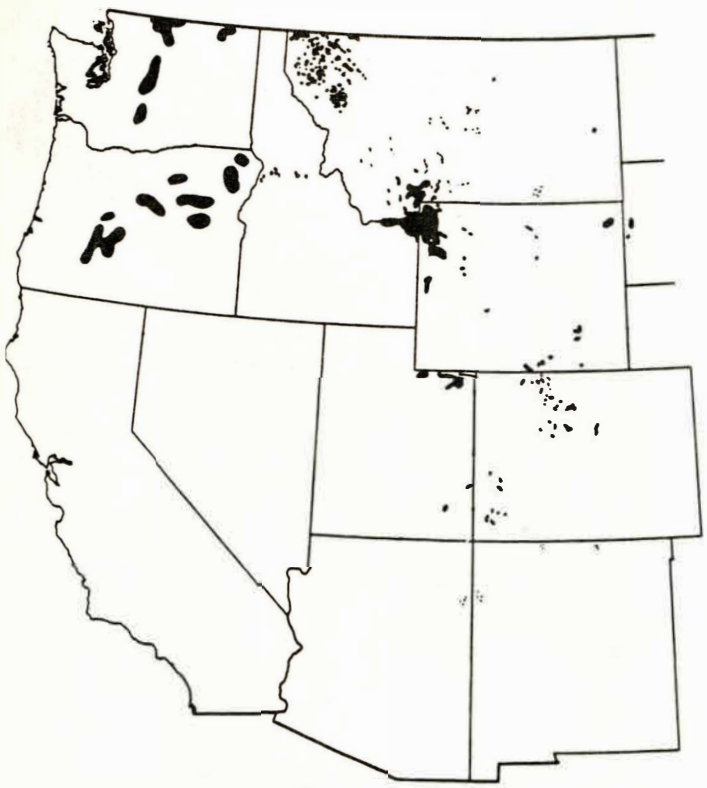

Figure 5.--Mountain pine beetle-infested areas

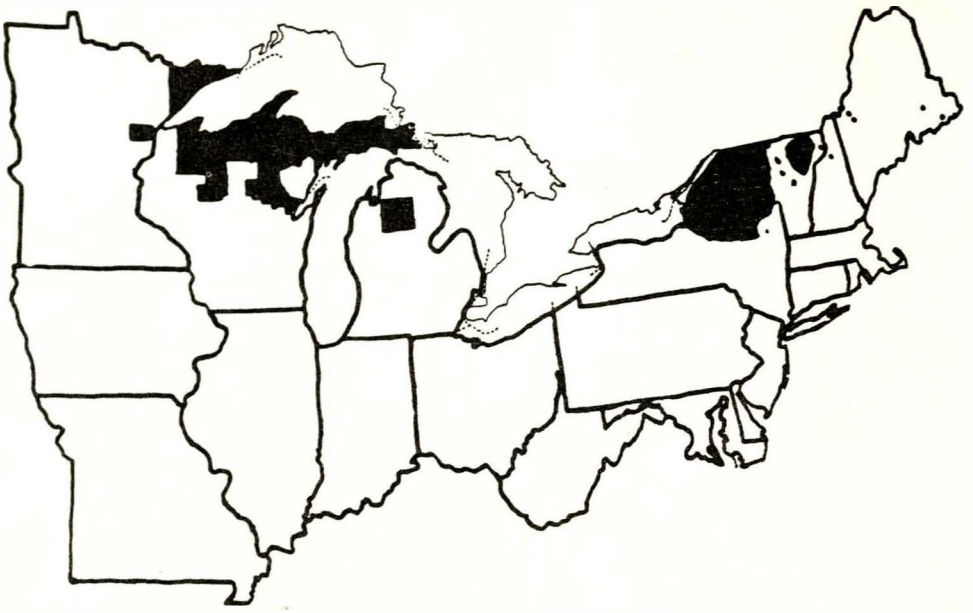

Figure 6.--Distribution of scleroderris canker (Gremmeniella abietina) in the Northeast

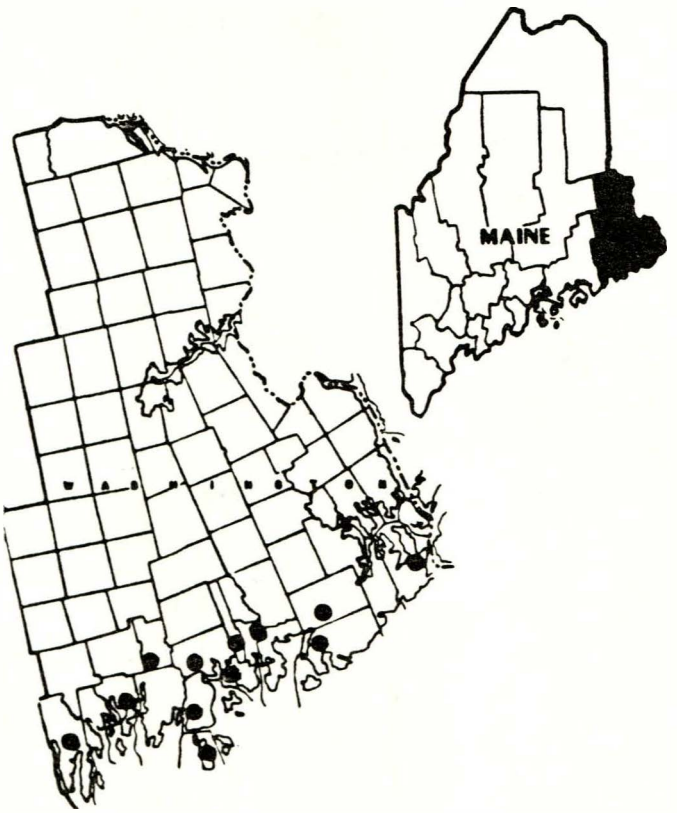

Figure 7.--Distribution of European larch canker (Lachnellula willkommii) on eastern larch in Washington County, Maine. ● = Township where infection was found.

Acleris gloverana (Walsh.), 38
Adelges piceae (Ratz), 25, 28
Aleurodicus dispersus Russell, 22
Alsophila pometaria (Harris), 30
Ambrosia beetle, 38
Archips argyrospilus (Walker), 22
Atta texana (Buckley), 29
Bagworm, 30
Balsam woolly aphid, 25, 28
Blackheaded pine sawfly, 30
Black turpentine beetle, 28
California flatheaded borer, 21
Choristoneura carnana californica Powell, 22
Choristoneura conflictana (Wlkr.), 15, 18
Choristoneura fumiferana (Clemens), 35
Choristoneura occidentalis Free., 4, 8, 14, 17, 25
Choristoneura orae Free., 38
Choristoneura pinus Free., 35
Choristoneura viridis Free., 26
Chrysoteuchia topiaria (Zeller), 4
Coleophora laricella (Hbn.), 4, 17, 26
Coleotechnites milleri (Busck), 22
Coleotechnites sp., 22
Coloradia pandora Blake, 9, 15, 22
Cone and seed insects, 26
Conopthorus coniperda (Schwarz), 28
Contarinia pseudotsugae Condrashoff, 4
Cranberry girdler moth, 4
Datana integerrima G. & R., 9, 30
Dendroctonus brevicomis LeC., 14, 17, 21, 25
Dendroctonus frontalis Zimm., 28
Dendroctonus jeffreyi Hopk., 17, 21
Dendroctonus ponderosae Hopk., 3, 8, 14, 17, 21, 25
Dendroctonus pseudotsugae Hopk., 3, 8, 14, 17, 25
Dendroctonus rufipennis (Kby), 3, 8, 14, 17, 25, 38
Dendroctonus terebrans (Olivier), 28
Dendroctonus valens LeC., 8, 14, 21
Dioryctria amatella (Hulst), 28
Dioryctria clarioralis (Walker), 28
Dioryctria disclusa (Heinrich), 28
Dioryctria merkeli (Mutuura & Monroe), 28
Dioryctria spp., 18
Dioryctria zimmermani (Grote), 9
Diprion similis Hartig, 29
Douglas-fir beetle, 3, 8, 14, 17, 25
Douglas-fir needle midge, 4
Douglas-fir tussock moth, 4, 8, 18, 22, 25
Dryocoetes confusus Swaine, 3, 8, 14, 17
Eastern tent caterpillar, 30
Elatobium abietinum (Walker), 38
Engraver beetle, 38
Eucosma sonomana Kearfoot, 4, 18
Eucosma spp., 28
Eurasian pine aphid, 22
Fall cankerworm, 30
Fall webworm, 30
Fir engraver, 21, 25
Flatheaded fir borer, 21
Forest tent caterpillar, 30, 35
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